

CLAIMS:

1. A nozzle for supplying/relieving pressurized
5 gas in gas assisted injection moulding of plastics
material, the nozzle comprising:

a body member adapted to be mounted in a mould
having a mould cavity, a portion of the body member or
an extension thereof extending into an opening in the
10 mould which at least communicates with the mould
cavity;

a sleeve member mounted for sliding movement in a
bore in the extending portion of the body member
between an extended position in which one end of the
15 sleeve projects beyond the extending portion of the
body member into the mould cavity, and a retracted
position;

said one end of the sleeve defining a valve port
for an inner valve member axially movable within the
20 sleeve for opening and closing the valve port,

attachment means for supplying pressurized gas to
the inside of the sleeve whereby the inner valve
member is movable into a valve port open position by
the pressurized gas;

25 means for moving the inner valve member into a
valve port closed position;

means for moving the sleeve between its extended
and its retracted positions, and

a gap between the adjacent wall of the sleeve and
30 the extending portion of the body member, which gap is
closed to the mould cavity when the sleeve member is
extended and open to the mould cavity when the sleeve
member is retracted, whereby in the retracted position
of the sleeve, the pressurized gas within the mould
35 cavity can vent to atmosphere.

2. A nozzle as claimed in Claim 1, wherein
means for moving the sleeve between its extended and

retracted positions is a reversible electric motor, the sleeve being connected to the motor by means which enable the sleeve to move linearly.

5 3. A nozzle as claimed in Claim 2, wherein when the sleeve reaches its extended position, the motor enters a stall mode.

10 4. A nozzle as claimed in Claim 2 or Claim 3, wherein with the sleeve in its extended position, pressure on the sleeve is isolated from the motor and its gear box.

15 5. A nozzle as claimed in any one of Claims 2 to 4, wherein the connection means between the sleeve and the motor is a nut and spindle in driving relation, the nut being driven by the motor and the spindle being connected to the sleeve.

20 6. A nozzle as claimed in any one of the preceding claims, wherein the body member has an external thread for mounting the nozzle in a mould part or a bracket fixed thereon.

25 7. A nozzle as claimed in any one of Claims 1 to 5, wherein the body member is bolted to a mould part.

30 8. A nozzle as claimed in any one of the preceding claims, wherein the wall of the sleeve is tapered inwardly from the outer end of the sleeve to define a lead-in to the valve seat of the valve port.

35 9. A nozzle as claimed in any one of the preceding claims, wherein the means for moving the inner valve member into a valve port closed position is a spring.

10. A nozzle as claimed in any one of the preceding claims, wherein the inner valve member is a sliding fit within the sleeve, and has at least one flat extending longitudinally of the valve member to
5 create a passage for pressurized gas through the sleeve when the inner valve member is extended by the pressure of the gas.

11. A nozzle as claimed in any one of the preceding claims, wherein the outer end of the sleeve
10 is of reduced external dimension relative to the internal dimension of the extending portion of the body member, and wherein the body member has at least one groove extending longitudinally from a position at
15 one end where it can communicate with the reduced end portion of the sleeve when the sleeve is in its retracted position, but is precluded from said communication when the sleeve is in its extended position, to an open position at its other end where
20 it communicates directly or indirectly with the atmosphere.

12. Apparatus for gas-assisted injection moulding including a nozzle as claimed in any one of
25 the preceding claims.

add a' }